

AD-A231 544

(2)

ONE FILE COPY

Perceptions of NATO Burden-Sharing

Charles A. Cooper and Benjamin Zycher

DTIC
ELECTED
FEB 01 1991
S B D

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

RAND

The research described in this report was supported by The Ford Foundation under Grant No. 840-0289A and by The RAND Corporation using its own research funds.

ISBN: 0-8330-0981-8

The RAND Publication Series: The Report is the principal publication documenting and transmitting RAND's major research findings and final research results. The RAND Note reports other outputs of sponsored research for general distribution. Publications of The RAND Corporation do not necessarily reflect the opinions or policies of the sponsors of RAND research.

Published by The RAND Corporation
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138

R-3750-FF/RC

Perceptions of NATO Burden-Sharing

Charles A. Cooper and Benjamin Zycher

June 1989

Supported by
The Ford Foundation

RAND

91-126-001

PREFACE

This report is a contribution to the ongoing policy debate on NATO burden-sharing. It is intended primarily for a general audience concerned with burden-sharing but it should be of interest to specialists in NATO affairs as well.

Funding was provided by The RAND Corporation and The Ford Foundation.



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification _____	
By <i>per letter</i>	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

SUMMARY

The allocation of burdens and responsibilities within NATO has been a contentious issue since the formation of the alliance. Deficits in the U.S. current account and the federal budget once again have moved the burden-sharing issue to the front burner of American politics: many Americans believe that U.S. economic problems result from or are exacerbated by the spending burden assumed by the United States for the defense of Western Europe. Sentiment to cut back U.S. troop levels in Europe is growing in response to perceptions of inadequate European defense efforts on their own behalf. This sentiment is understandable, but misjudges burden-sharing realities. This report seeks to explore more fully the reasons that European defense spending is proportionately less than that of the United States and to contrast the European spending record with their more impressive record in supplying defense resources to the Atlantic Alliance. In the course of doing so it will become clear that there are no simple quantitative criteria for assessing burden-sharing performance.

The fundamental "transatlantic bargain" within NATO balances U.S. *commitment* against European *contributions* toward European defense. This bargain has endured a long and difficult evolution, despite European doubts about the reliability of the U.S. commitment and U.S. dissatisfaction with the magnitude of the European contribution to its own defense. Several enduring themes have bedeviled burden-sharing issues almost from the inception of NATO, including European skepticism of the durability of the U.S. commitment to Western Europe, tension between extended nuclear deterrence and the buildup of conventional forces, differing views of German rearmentation, problems posed by the absence of an integrated European defense effort, and conflicts between the U.S. and European members over out-of-area involvements.

Thus, the continuing dispute over NATO burden-sharing can be seen to stem from differences in interests and perceptions about the goals, means, costs, and benefits of activities undertaken by NATO collectively. Accordingly, no detailed burden-sharing formula has been specified or is likely to win acceptance either in principle or in practice. Two conceptual approaches to the analysis of burden-sharing can be distinguished: a "Fundamentalist" approach concentrating upon the allocation of "fair shares" and equality of financial sacrifice and effort, and an "Atlanticist" approach emphasizing alliance unity and mechanisms designed to yield effective military force structures for NATO as a whole.

Public debate over burden-sharing has tended to concentrate on spending, since it is easier to measure than "military resources" taken as a whole; but for many analytic purposes it is resources rather than expenditures that are more relevant. Moreover, reliance upon spending shares as a measure of relative burdens can be highly misleading because of the complex and varying relationship among defense expenditures, the true (opportunity) cost of defense, the provision of defense resources, and the ultimate value of the military services obtained. Even for spending clearly producing military services efficiently, spending measures can neither distinguish among the varying levels of military productivity yielded by spending on different activities nor adjust for the varying relevance to NATO of different kinds of defense programs. Nations inevitably "discount" others' defense spending because of differing foreign policy objectives, threat perceptions, and defense strategies. Finally, the comparison of spending indices is complicated by the much higher variability in U.S. defense spending. All these problems are separate from the effects of exchange rate shifts and other sorts of accounting issues that unavoidably afflict comparisons of burdens as measured by spending.

The "equity" question introduces additional analytic complexity. Even if measurement and comparability problems were absent, collective activities inevitably are valued differently by different nations. Thus, if the United States has a significantly higher perception of the Soviet threat, then it is wholly plausible that the United States could value military services in Europe more highly than do the other alliance members. In this case, a higher U.S. "burden" would not be inappropriate.

The growing sense in the United States of "unfairness" in the allocation of NATO burdens has been based largely upon comparison of spending as a proportion of national output. Such comparisons show that the United States over a long period has spent more as a proportion of GDP (gross domestic product) on defense than have our NATO partners. However, conclusions about the U.S. share of the collective NATO burden change in important ways upon a shift in focus from spending to the provision of military resources. For example, U.S. military manpower, as a proportion of total U.S. population, is about average for NATO as a whole, and the U.S. share of total NATO manpower is lower than its share of total NATO population. The U.S. contribution of main battle tanks is lower than its proportion of total NATO spending. The same is true for U.S. jet fighters as a proportion of all NATO jet fighters. After adjusting for the age of the tanks and jets, the U.S. contributions as proportions of the NATO total still are lower than its share of total NATO spending.

Another crude index of contribution in terms of real military resources in division-equivalent firepower (DEF). Examination of DEF shares displays the same general pattern: the U.S. share of total NATO DEF is lower than the U.S. share of total NATO spending or of total NATO GDP. Finally, the military capital stock is another index of contribution measured in terms of military resources. Since the early 1960s the U.S. share of total military spending among the "Big Four"—the United States, the United Kingdom, the Federal Republic of Germany, and France—has increased from 70–71 percent to over 75 percent. Over the same period, the U.S. share of military capital has declined from over 76 percent to somewhat more than 72 percent for the four nations. In short, the European share of the collective burden rises significantly upon a shift in focus from spending to military resource measures of contribution. This is true regardless of the choice of real resource index, although the choice of resource measure affects the proportionate burden contributed by various nations. Thus, the public discussion of burden-sharing in the United States, by concentrating on expenditure measures, tends to overstate the U.S. contribution relative to that of the allies. And by any of the military resource indices examined in this report, our European allies contribute very substantially to the provision of final military services in Europe.

U.S. defense spending tends to oscillate more sharply than that of the Europeans. While U.S. spending as a proportion of GDP even at its lowest is higher than that of the Europeans, the difference in recent years is not representative of the longer-term comparison. Thus, part of the current U.S. impatience with defense spending by our NATO partners has resulted from the "up" cycle in U.S. defense spending since about 1979; the "down" cycle—unquestionably now beginning—may narrow the difference once again.

Changing perceptions of the Soviet threat, the forthcoming 1992 change in the European Economic Community (EEC), and the dilemmas inherent in the INF (Intermediate-range Nuclear Forces) treaty complicate the burden-sharing issue. Burden-sharing has to be addressed together with needed changes in NATO military strategy and doctrine, and in light of the new political problems posed for NATO governments by the political challenge inherent in the new style of security diplomacy displayed by the Soviet Union.

Given the economic and political constraints on NATO defense spending, it will be difficult in the short term to improve NATO's conventional posture substantially relative to that of the Soviets. It would be imprudent to rely solely upon arms control negotiations—and Soviet acceptance of sharply asymmetric reductions—to further that aim. At the same time, negotiations are likely to be pursued, with both the

United States and the Europeans tempering their burden-sharing complaints so as to avoid complicating the negotiations over conventional arms. However, should these negotiations become protracted or seemingly unproductive, burden-sharing as an issue could become more contentious once again. U.S. pressure for greater European spending is likely to have only negligible effects on our partners' spending, but possibly large and adverse effects on NATO unity. This is particularly true since such U.S. pressure would be exerted at a time of diminishing U.S. defense spending growth and at a time of diminished perceptions on the part of the Europeans of the Soviet threat.

A clearer consensus within NATO on a future force structure and military doctrine is essential to acceptable future burden-sharing arrangements that must be integrated with force structure decisions and doctrine developments. Strengthening of the "European pillar" and alliance consensus on the role of U.S. troops in Europe could be beneficial in this regard. The advent of a barrier-free EEC in 1992 carries a potential for a more unified West European economy that is larger than that of the United States, and for a Europe that is more cohesive militarily than is now the case were this potential to materialize. Western Europe may emerge also as a more equal partner of the United States in European security matters. Such recent developments as the Franco-German brigade and multilateral funding of the basing costs of the U.S. F-16s being transferred from Spain to Italy are signs of an increasingly multilateral approach toward European defense. The United States should support this evolution but should make it clear that such a strengthening of the European pillar would not result automatically in *unilateral* reductions of U.S. forces in Europe.

It is the presence of the U.S. troops in Europe that symbolizes the "burden-sharing" issue. From a U.S. viewpoint, their presence inevitably becomes the focus of burden-sharing. From a European viewpoint, U.S. troops are tangible evidence of the American commitment, and constitute the glue cementing the alliance. Nonetheless, the increasing prosperity of the European economies makes inevitable a relative shift of defense responsibility from the United States to the Europeans. This is likely over time to take the form of reduced U.S. troop deployments in Europe and a division of responsibilities closer to that envisioned in the early years of the alliance. Should conventional arms talks with the Soviets be productive, U.S. troop reductions can begin earlier and total larger numbers. If the negotiations are not successful, the troop reductions can be forgone, deferred, and/or reduced.

Over the past four decades, NATO has displayed a remarkable degree of unity and cohesiveness in part because of its tolerance of national autonomy on defense matters and the democratic strains and

tensions that inevitably result. NATO has not yet adjusted fully to the new challenges of a post-INF world and a "new-look" Soviet Union. Nonetheless there are more grounds for optimism than concern that the historic transatlantic bargain of U.S. commitment and European contributions can be sustained into the foreseeable future.

ACKNOWLEDGMENTS

Several colleagues offered detailed and useful suggestions for improvements during preparation of this report. Extensive reviews were provided by C.R. Neu and Robert Nurick. Robert Levine, Jack Stockfisch, and Charles Wolf, Jr. read the manuscript and provided numerous suggestions for additional improvements. Finally, the paper benefitted from other comments and discussions with additional colleagues, both at RAND and in the policy community, too numerous to list here. We are indebted to all of them.

CONTENTS

PREFACE	iii
SUMMARY	v
ACKNOWLEDGMENTS	xi
TABLES	xv
Section	
I. INTRODUCTION	1
Enduring Structural Issues in NATO Burden-Sharing ..	2
Alternative Approaches	6
II. SOME CONCEPTUAL ASPECTS OF BURDEN- SHARING	11
Opportunity Costs	12
Discounting	13
III. SPENDING AND MILITARY RESOURCE MEASURES OF RELATIVE "BURDEN"	19
IV. CONCLUSIONS: BURDEN-SHARING AND THE EVOLUTION OF NATO	36
Strengthening the "European Pillar"	40
U.S. Troops in Europe	42

TABLES

1. Two approaches to burden-sharing	8
2. 1986 defense spending, GDP, and defense/GDP	20
3. 1986 defense spending and GDP as a proportion of NATO total	22
4. 1986 contributions relative to "ability" to contribute	23
5. Average annual growth of real defense spending	24
6. 1986 population and military manpower	25
7. Main battle tanks and tactical jet fighters, 1985	26
8. Main battle tanks and tactical jet fighters, 1985, adjusted for age	27
9. NATO division-equivalent firepower	28
10. Military resource contribution shares relative to GDP shares	29
11. Military resource contribution shares relative to spending shares	29
12. Big Four military capital	31
13. Shares of Big Four military capital	32
14. Shares of Big Four military spending	33
15. Big Four: ratio of military capital share to military spending share	34

I. INTRODUCTION

Innumerable articles and reports, thousands of pages of congressional testimony, and no small number of books, both polemical and scholarly, have been devoted to burden-sharing in NATO over the past 40 years. Still, the territory, if not virgin, is fertile and likely to remain that way for as long as NATO remains an important force in world affairs. Defense is expensive, democracies always face budget pressures, politicians are disposed to argue that allies are not doing their fair share, and diplomats are equally disposed to hope that the problem will go away if nobody talks about it. The subject is inherently disputatious, and it is not going to go away.

Concerns in the United States over seemingly intractable U.S. budget and trade deficits have rekindled public interest in the subject. The contrast between the apparently healthy financial situation of our NATO partners and the growing domestic and international indebtedness of the United States has drawn attention to the fact that European defense expenditures remain proportionately far smaller than ours. Allegations relating American economic problems to the assumption of a disproportionate share of the free world's security burden ever since World War II have received considerable public attention.¹

American public opinion seems to reflect these developments. According to surveys conducted during 1988 by Americans Talk Security,² the public believes the major threats to U.S. national security to be changing from those primarily associated with Soviet expansionism:

- Of those surveyed, 57 percent think that new threats like international drug trafficking and economic competition pose a greater danger than do our military adversaries.
- Only 22 percent of Americans believe that the United States is the "top economic power in the world today," and 50 percent believe that the U.S. economy is slipping dangerously when compared with other industrialized nations.
- There is agreement by 45 percent that "the economic competition from Japan and West Germany poses more of a threat to

¹See, e.g., Paul Kennedy, *The Rise and Fall of the Great Powers*, Random House, New York, 1987 and David Calleo, *Beyond American Hegemony—the Future of the Western Alliance*, Basic Books, New York, 1987.

²These surveys are discussed by John Martilla, "American Public Opinion: Evolving Definitions of National Security," in Edward Hamilton (ed.), *America's Global Interests: A New Agenda*, W. W. Norton, New York, 1989.

our nation's future than the threat of communist expansion ever did."

These attitudes, unsurprisingly, spill over directly into attitudes toward burden-sharing *per se*. A clear majority of those polled now believe we should be spending less than we are on the defense of Western Europe (and Japan).

Reflecting this perspective, as well as Department of Defense concern with the conventional balance in Europe, Deputy Secretary of Defense Taft undertook highly publicized efforts to persuade our NATO partners to increase their defense spending, and U.S. and European officials agree that burden-sharing is a major issue for NATO today. A special panel of the House Armed Services Committee, convened early in 1988 and chaired by Representative Patricia Schroeder, has issued an interim report³ on the subject of burden-sharing generally, with special attention to NATO. Such attention promises to keep the subject before the public for some time to come.

ENDURING STRUCTURAL ISSUES IN NATO BURDEN-SHARING

The fundamental "transatlantic bargain" over NATO balances U.S. commitment against European contributions. This bargain has proved durable through a long and untidy historical process, although many Europeans have expressed persistent doubts about the reliability of the U.S. commitment even as many Americans have expressed their dissatisfaction with the levels of European contributions. When NATO was first created, burden-sharing arrangements were imprecise, as is not unusual in international diplomacy, and different parties consequently made different assumptions about what was expected of them and what they could expect of others. Moreover, events soon intervened to alter the initial assumptions about the division of the burden between the United States and the European members of NATO.⁴

Discussions during the year prior to the signing of the North Atlantic Treaty in April 1949 persuaded the U.S. Congress to support the treaty with the understanding that the U.S. contribution would be limited to strategic air power and naval forces. In return for the U.S.

³*Report of the Defense Burden-sharing Panel of the Committee on Armed Services, House of Representatives, Washington, D.C., August 1988.*

⁴There are many good books on the history of NATO. An excellent summary that is particularly useful on burden-sharing is Stanley R. Sloan, *NATO's Future: Toward a New Transatlantic Bargain*, National Defense University Press, Washington, D.C., 1985.

commitment and its strategic shield, the West Europeans committed themselves to serious efforts to build up their own defenses, taking into account their limited economic capacity at the time to do so. (For some years, European defense efforts were dependent on economic support provided to them by the Marshall Plan and the defense support provided through U.S. military aid programs.) Germany was an original signatory, and the French National Assembly agreed to French participation on the explicit understanding that NATO's establishment would *not* lead to Germany's rearmament and participation.

The outbreak of the Korean War in June 1950 had a galvanizing effect on the level and makeup of NATO forces in Europe. In the fall of that year, President Truman announced his intention to dispatch substantial numbers of U.S. ground forces to Europe, with the understanding that comparable European efforts would be forthcoming. By this time, German rearmament had become a basic goal of U.S. policy-makers, who saw no way to defend Western Europe, including West Germany, without a significant German contribution. However, the French were adamant that they would not accept a rearmed Germany within a NATO framework. Under pressure from the United States and the United Kingdom on the issue of German rearmament, the French proposed the establishment of a European Defense Community (EDC), which was to include German units as part of an integrated European military force. It was on this basis that the Europeans agreed to contribute sizable forces paralleling those sent by the United States to Europe. The military alliance between the United States and its NATO partners was made dramatically evident in December 1950 by the appointment of General Eisenhower as the first Supreme Allied Commander, Europe (SACEUR). The eventual outcome of what has come to be known as the "Great Debate" in the U.S. Senate was support for the President and the passage in 1951 of SR 99 supporting the dispatch of U.S. troops to Europe.

Implementation of the understanding on burden-sharing proved very difficult. Throughout 1951, NATO experts reviewed military requirements for the defense of Europe and the economic and military capabilities of NATO's members. Agreement was reached in February 1952 at the NATO meeting in Lisbon on force goals for NATO of 50 active divisions and on targets for future increases. Subsequently, these force goals were found to be hopelessly unrealistic for most members, including the French, who were bogged down in Indo-China, and the British, who were immersed in the problems of imperial dissolution. Slow progress was made in Europe on ratification of the EDC, as a result of the political impact of a vigorous Soviet peace campaign, concerns about the reliability of the U.S. commitment to Europe once the EDC came

into existence, and the fallout from the U.S. policy of increasing NATO reliance on the U.S. nuclear umbrella. Finally, the frustrating story of the EDC came to an end when the French Assembly, still fearful of a resurgent Germany, refused in August 1954 to support its establishment.

The United States and the United Kingdom moved very quickly to develop an alternative way to accommodate German rearment. In October 1954, a four-power agreement was reached between the United States, the United Kingdom, France, and West Germany providing for the recognition of the Federal Republic of Germany (FRG) as a sovereign state, the continued stationing of allied forces on German territory, and monitoring of West German rearment by the West European Union. This agreement opened the way for the formal admission of Germany to NATO in May 1955. The only major structural change to NATO since that time has been the French withdrawal in 1966 from the NATO integrated military command structure in 1966 (but not from NATO itself).

Meanwhile, the Lisbon force goals remained beyond attainment. The introduction of German forces marked a significant increase in European military capabilities, although the full development of the German forces was a lengthy process; German public support in the mid-fifties for building up military forces was lukewarm in the face of Eisenhower's New Look and the Soviet-inspired thaw in international relations. Adenauer was forced to back down from a proposed initial conscription term of 18 months to one of 12 months, and from a force goal of 500,000 men to one of 300,000—a program the Bundestag approved in October 1956. By the end of 1957, active duty military personnel in Germany totalled 134,000, and a steady buildup was continuing. German forces finally came to exceed U.S. forces in Europe in 1965, and the twelfth German Division, projected at Lisbon, finally was assigned to NATO in April 1965—15 years after U.S. troops were first sent overseas for the peacetime defense of Europe.

As this compressed history of the early years of NATO indicates, the original "transatlantic bargain" was durable in concept even though specific arrangements proved vulnerable to the ebbs and flows of political currents. Several enduring themes that were present almost from its inception have continued to influence transatlantic burden-sharing to the present day. These include:

- European skepticism of the durability of the U.S. commitment to Europe. This has been felt most strongly in France, but emerges elsewhere periodically. The achievement by the Soviets first of strategic nuclear parity, then of theater nuclear

parity has compelled changes in NATO doctrine and strategy to maintain the credibility of the U.S. nuclear deterrent both to the Soviet Union and to European members of NATO. The independent nuclear forces of the UK and France are in part a consequence of the ineluctable uncertainties surrounding the U.S. nuclear deterrent in Europe. The presence of U.S. forces in Europe, and on the Central Front in particular, has served not only to strengthen European conventional defenses but to confirm America's nuclear as well as its conventional commitment to its allies. While Europeans have wanted to do enough to demonstrate their commitment to European defense, they have worried about doing so much that U.S. strategists could argue that American troops could be withdrawn safely.

- Reliance upon U.S. nuclear weaponry as a deterrent to Soviet aggression inevitably has undercut U.S. pressures on its European partners for strengthening NATO's conventional forces. The attention paid by the United States to NATO's capacity for conventional war fighting has seemed to many Europeans to cast doubt on the resolution of the United States to use nuclear weapons in a crisis, and thus to weaken deterrence rather than to strengthen it. Accordingly, the Europeans have resisted the buildup of a conventional warfighting capacity and their own conventional capabilities. "No early use" of nuclear weapons is only the most recent catch phrase to try to balance these concerns. NATO burden-sharing and NATO doctrine are entangled inextricably.
- As the four-power agreement shows explicitly, the presence of U.S. forces in Germany served the important political purpose of defusing the concerns of Germany's neighbors about German rearmament. This factor is much diminished today with respect to conventional arms. However, any rearrangement that would open up the question of German nuclear arms would be likely to create serious problems and to be viewed with considerable concern and even alarm in some countries, including Germany itself.
- The implosion of the EDC marked the end of any serious attempt to create an integrated European force. This subject has arisen again in discussions of a so-called "European pillar," in part for burden-sharing reasons.
- From the earliest years of NATO, domestic politics have impinged on NATO issues and developments in all member countries. This is not surprising in a relatively unstructured alliance of fractious democracies. Indeed, the scope for

domestic disagreement about various aspects of NATO membership has provided the alliance with an important, albeit sometimes inconvenient or uncomfortable, safety valve. Dissent is tolerated, if not welcomed, and has not to date led to renunciation of NATO membership—even in the case of France. The result has been a less efficient alliance—but a very durable one.

- Finally, right from the beginning, out-of-area conflicts have posed problems for NATO. The Korean War, especially in its initial stages, was the high water mark for NATO cooperation out-of-area. Conflict and skepticism have been more normal—whether the issue was French and British colonial involvements, U.S. entanglement in Viet Nam and more recently in Central America, or Greek-Turkish military confrontations. The independent but concerted involvement of a number of NATO nations in the Persian Gulf in the last year is more a welcome exception than the rule.

Looking back on NATO's genesis and considering the sources of potential disagreement and disharmony that the above themes suggest go with the territory, it is evident that the burden-sharing issue in NATO is far more complex than a mere squabble over money. "Free-riding" is only part of the problem and not necessarily the most important part. Accordingly, it is not surprising that there has never been a fully satisfactory resolution of the inherent burden-sharing issue between the United States and its NATO partners, which stems from the incommensurate risks, contributions, and benefits perceived at different times by individual NATO members. Although important initiatives have been taken—to internationalize NATO decisionmaking (including an integrated military command structure), consultation arrangements to achieve consensus at a NATO level on NATO strategies and force levels, formulas for sharing the cost of NATO infrastructure prospects, and limited efforts at joint procurement—the independence of NATO members, sovereign with respect to the overwhelming preponderance of their defense activities, remains the core of its strength and the source of many of its tensions.

ALTERNATIVE APPROACHES

NATO has chosen wisely not to specify a detailed burden-sharing regime for its members, recognizing that experts differ in their assessments, bureaucrats want to be left alone to work things out on a case-by-case basis, and today's politically acceptable compromise may

become tomorrow's unnegotiable political grievance. No magic formula is suddenly going to be found that will take the place of the continuously evolving political transatlantic tug-of-war over burden-sharing.

Conceptually, we can outline two generic approaches. The "Fundamentalist" approach is driven by a concern with "fair shares" and the importance of something approaching equality of financial sacrifice and effort. It assumes that endemic free-riding is the major reason for lower defense shares in Europe. The second, "Atlanticist" approach is driven more by the practical problem of eliciting effective military contributions and maintaining alliance unity. It accepts that there are legitimate reasons for lower defense spending shares in Europe and that some degree of free-riding is inevitable. Starting from these central premises, the following discussion separates two approaches with respect to a number of other issues, so that each approach constitutes a logically consistent cluster of views. While only a straw man would associate himself with either approach in its entirety, comparison of the two approaches (see Table 1) may help the reader to assess particular burden-sharing prescriptions.

The Fundamentalist approach starts with the not-unreasonable notion that Europeans should spend proportionately as much on their defense as Americans do, and concludes that if, for whatever reason, they are not willing to do so, we should reduce our expenditures for the defense of Europe by withdrawing all, most, or some of our troops from Europe. Politically resonant, this approach nevertheless has some troublesome implications. Expenditures on defense, on the one hand, and the provision of defense inputs such as troops, guns, airplanes, etc. on the other, are not identical. Unfortunately for analysts and policy-makers, it makes a big difference in the calculation of relative burdens whether defense burdens are measured in dollars spent or in inputs provided. (This point is discussed and illustrated in Secs. II and III.) More fundamentally, analysts recognize that there is no unique way of aggregating defense inputs into a single-valued index of defense output. (This issue, too, is discussed in Sec. II.) Consequently, if all expenditures on defense count equally in estimating "fair shares" regardless of whether they are efficient, necessary, or relevant to NATO purposes, even members with high-cost defense programs (for protectionist or other reasons), or programs of only marginal relevance to NATO's purposes, are deemed to be contributing in proportion to their expenditures. Nations that produce military services with an unusually high degree of efficiency, or whose economic growth is relatively rapid are, in effect, penalized for their superior performance. NATO objectives of efficiency and productivity in the military sector, on the one hand, and equitable burden-sharing as measured by spending on the other, are in

Table 1
TWO APPROACHES TO BURDEN-SHARING

Fundamentalist	Atlanticist
• Focus on defense spending relative to GNP	• Focus on provision of military inputs to European defense
• NATO cohesion is assumed	• Strengthening NATO cohesion is a continuing objective
a. U.S. commitment fully credible	a. Credibility of U.S. commitment not taken for granted
b. Assumes a common threat perception	b. Narrowing differences in European and U.S. threat perceptions important
c. Assumes shared view of deterrent effect of conventional war-fighting capabilities	c. Recognizes differing views of deterrence
d. Out-of-area cooperation expected	d. Out-of-area cooperation has to be negotiated as a case-by-case basis
e. Domestic political constraints on defense spending seen as largely excuses for free-riding	e. Recognizes legitimacy of domestic political constraints
• U.S. forces in Europe to help Europeans defend themselves	• U.S. forces in Europe primarily to serve U.S. national security
a. Sees contribution of U.S. forces as solely military in character	a. Recognizes political contribution of U.S. forces to NATO cohesion
b. Withholding U.S. force would compel Europeans to spend more for own defense	b. Repercussions of withdrawing U.S. forces from Europe not certain

at least partial conflict. West German economic growth, for example, has been responsible for some of the perception in the United States that German military efforts are inadequate, having failed to yield a defense share of GNP as high as those of the United States, the United Kingdom, or France.

The alternative Atlanticist approach focuses not on how much allies spend for military purposes, but on their provision of military inputs in support of NATO's agreed defense strategy. This approach is not focused on numerical expenditure goals and accordingly accommodates

variability and quality differences in defense spending. Moreover, this approach encourages specialization (including joint procurement) since the emphasis is on the provision of military inputs rather than on equalization of costs. With determined leadership such an approach can lead to acceptable outcomes even though there are no quantitative targets to which members are committed and no mechanisms for ensuring that over time agreed burden-sharing inequities, however defined, are reduced or eliminated. But while this approach may be more workable and flexible on a day-to-day basis than the Fundamentalist approach, it makes it easier to neglect the need for assuring that burden-sharing outcomes are perceived publically as equitable. The situation today, in which the United States feels let down by its lower-spending allies, reflects such inattention.

Another area of difference between the two approaches centers upon assumptions about NATO as an alliance. The Fundamentalist approach assumes NATO's unity, cohesion, a common perception among NATO allies of the Soviet threat, a well-defined view of how to deter a Soviet attack, and an unquestioned belief in the U.S. commitment to NATO. Consequently, in this approach, none of these issues is affected by burden-sharing pressures, or is relevant to burden-sharing outcomes. An Atlanticist approach assumes continuing differences of opinion on all of these issues, within and among NATO members. It is concerned also with confirming and reinforcing NATO unity and confidence in the U.S. commitment as an essential element in deterring Soviet military or political aggression. It recognizes that there is a connection between NATO doctrines and strategies and that the defense efforts of NATO members may well be legitimate, rather than a mere excuses for not doing more. An Atlanticist might well feel that the Fundamentalist approach mistakes the trees for the forest and may be as likely to result in less in the way of European contributions as more.

The differing points of view are readily apparent in the different ways in which the question of U.S. troops in Europe is addressed. Consistent with a Fundamentalist approach to burden-sharing, U.S. troops are assumed to be in Europe in large measure to defend Europe and in whole measure for military purposes. An Atlanticist approach, however, stresses the U.S. interest in European security, recognizing that the presence of U.S. troops in Europe serves the important political purposes of strengthening confidence in the U.S. commitment to NATO and facilitating European military cooperation, thereby contributing to alliance unity and deterrence. Finally, the two approaches differ in their view of the consequences of withdrawing U.S. forces from Europe: the Fundamentalists believe that Europeans would step

forward militarily to fill the gap left behind and, in the process, more nearly equalize financial burdens; Atlanticists, uncertain of the European response and fearful of unleashing accommodationist pressures, believe that U.S. force reductions must be carefully negotiated well in advance with other NATO members or, even better, restricted to those determined as part of a conventional arms control agreement.

In the final analysis, the critical difference between the two approaches may be that the Fundamentalist approach sees burden-sharing as an issue that can, and indeed should, be addressed independently of other issues, whereas the Atlanticist approach sees burden-sharing as one among many other important issues that have to be integrated politically to permit the continued cohesion of NATO. Consequently, a Fundamentalist approach lends itself to public confrontation about spending levels and risks adverse reactions by lower-spending European members to the threats and pressure involved, whereas an Atlanticist approach stresses the need for political skill and compromise to maximize contributions, but risks public cynicism and dissatisfaction in the United States. This report returns to these issues in its final section.

II. SOME CONCEPTUAL ASPECTS OF BURDEN-SHARING

Although many people define the defense burden in terms of costs or expenditures on defense, military analysts tend to think of defense burdens in terms of the real resources (e.g., manpower and weaponry) that provide the military services needed to meet national security objectives. Troops and weaponry themselves are inputs in the provision of such ultimate outputs as "deterrence" and "security," which are of more fundamental interest, but which present severe difficulties in measurement.¹ The public discussion of burden-sharing both in the United States and internationally has tended to be conducted in terms of expenditures, since they are easier than real resources to measure; and expenditures offer a convenient way to aggregate and compare the large and heterogeneous array of resources combined to provide military services.

The term "burden-sharing"—as it has come to be used to describe disputes over the allocation of NATO *expenditures*—thus is too narrow. The relative contribution of real military resources is at least as central as relative expenditures; indeed, for many analytic purposes, it is resources rather than expenditures that are more central and more closely associated with the ultimate goals of deterrence and security.²

Despite the usefulness of expenditure data for discussion of many issues in defense policy, reliance upon spending shares as a measure of burden-sharing can be misleading because of the complex and variable relationships among expenditures, costs, defense inputs, and the value

¹However, because potential adversaries presumably face equal difficulty in measurement of military effectiveness, the resources that are mobilized may represent "final" indices of contributions to *deterrence*.

²Strictly speaking, individual NATO members could provide different packages of military services, on the basis of comparative advantage, with all costs borne by a central fund financed through alliance members' contributions. In this case, relative financial contributions would serve as a conceptually correct index of "burden-sharing." One problem with such a scheme is that individual nations would bear only a part of any inefficiency taking the form of overly expensive provision of their assigned military responsibilities. Under the current system, the analogous problem is that individual nations bear only a part of any less effective deterrence or warfighting capability caused by too little spending or inefficient spending yielding fewer real military services than otherwise would be obtained. Several NATO programs in fact are funded jointly, but they are small relative to the aggregate NATO defense effort; the overwhelmingly predominant pattern is discussion and agreement within NATO on *military* contributions by each nation, with those defense outputs both provided and financed by the alliance members themselves.

of defense spending. Defense inputs are the actual manpower and equipment that military forces comprise. And the ultimate value of defense spending—the usefulness of the military services obtained—obviously differs from the inputs themselves. This general point is made by Defense Department analyst Franklin Spinney:³

At the core of today's defense debate is the unstated assumption that spending is strength: input is output.... This obsession with spending... has not produced an increase in military strength and preparedness proportional to the large claim made on public and private resources.

The question of the relationship between spending and defense contributions is central to the transatlantic debate over burden-sharing.⁴ If among different members of the alliance, opportunities forgone in the civilian economy do not bear the same proportional relationship to defense expenditures, or if contributions of defense resources (e.g., manpower and equipment) are not proportional to budget expenditures, or if ultimate defense capabilities are not proportional either to expenditures or to the provision of defense resources, the comparison of defense expenditure shares inevitably neglects important analytic and political aspects of relative "burdens."

OPPORTUNITY COSTS⁵

Defense expenditures measure only imperfectly the opportunity cost of contributions to NATO defense, but opportunity cost is both the more relevant and the more elusive parameter. Murray Weidenbaum has pointed out that defense resources are highly specialized, utilizing large amounts of R&D, sophisticated production processes, capital, and young male labor.⁶ Different systems of taxation combine with differing productivities of inputs in nondefense uses and with different patterns

³"What \$2 Trillion Missed," *Washington Post*, October 30, 1988.

⁴For those inclined to think in economic terms, it may be useful to think of the defense sector as one in which defense expenditures purchase defense resources (or inputs), manpower and weaponry, for example, which then are aggregated into defense outputs or services through a production function (i.e., a strategy or doctrine). In addition, both defense expenditures and defense resources provided by NATO members are termed "contributions" in different contexts.

⁵"Opportunity costs" refer to what is forgone as a result of a particular expenditure or economic activity, rather than to the expenditures or activities themselves. For example, the opportunity cost of guns is measured in terms of the butter that could have been produced instead.

⁶The relative value of such resources will differ across nations and over time. Current demographic strains in Europe—particularly in the FRG—illustrate that opportunity costs can vary over time even without any change in the inputs that are provided.

of distortion in resource use to yield varying patterns of opportunity costs across nations and over time.

Even the relatively simpler question of the effect of defense spending on economic growth enjoys no consensus among economists. Defense spending can affect the level and kind of technological progress observed in the nondefense sector, in ways that are subject to sharp debate. The specialized nature of defense resource use suggests that the variability of defense spending programs itself may be a source of high opportunity costs. Thus, the opportunity costs of defense burdens that ostensibly are equal may differ, and the differences themselves may shift over time.

These differences in the underlying opportunity costs of national defense burdens are reflected in part by the political pressures and constraints that bear upon national defense budgets. Elected officials can be expected to be sensitive to such short-term opportunity costs, and to react differently to similar defense programs depending upon their assessments of ensuing economic and social impacts. The tradeoff between guns and butter is not always easy to measure, but it is that tradeoff that determines the real burden of defense spending.

DISCOUNTING⁷

NATO is a voluntary alliance of sovereign states with "partly divergent national military purposes."⁸ Moreover, the alliance partners have differing views on how best to achieve the military purposes upon which common agreement is reached. Thus, in addition to differences in the opportunity costs of defense spending, nations differ as well in their perceptions of the value of the military services contributed by individual members of the alliance. Such differences carry important implications for the burden-sharing debate; nations typically do not value defense spending by others at its full cost. Instead, nations implicitly "discount" others' spending for the reasons discussed below, thereby calling into question the use of defense spending as the sole basis for evaluation of relative burdens. Whereas the United States

⁷Malcom W. Hoag first used this term in the sense that it is used in this report more than 25 years ago, in his contribution on "The Economics of Military Alliance" to Charles Hitch and Roland McKean's classic RAND study, *The Economics of Defense in the Nuclear Age*, Harvard University Press, 1960. The current debate on burden-sharing has been impoverished by the neglect of the concept of discounting in recent years. A forthcoming paper by Professor Martin McGuire of the University of Maryland provides a formal theoretical treatment of a concept similar to that set forth here.

⁸Charles Hitch and Roland McKean, *The Economics of Defense in the Nuclear Age*, Harvard University Press, 1960, p. 286.

and the Europeans inevitably discount each other's spending, it is European discounting of U.S. spending that has been most prominent. This is not surprising since it has been the level of U.S. defense spending that has been used as the measure of others' efforts, rather than the reverse.

Even within the United States there are critics who discount the value of some U.S. defense spending. A good example is provided by the sharp and ongoing debate over the degree to which the 1979-1988 military buildup has resulted in enhanced military capabilities. Such skepticism about the Reagan buildup is not limited to pacifists and others who can be described as anti-military; it is shared as well by many who favor enhanced defenses but do not believe that the increase in capability has been commensurate with the increase in spending. A recent acid assessment is provided by a military budget expert and former member of President Reagan's Council of Economic Advisers.⁹

According to the Constitution, the single most important role of the Federal government is to provide "for the common defense." The large increase in real defense spending that began in 1979 [which the author notes elsewhere was the largest peacetime buildup in U.S. history] did not contribute much toward the goal.

Whereas the Reagan buildup has been controversial even to many Americans, European skepticism about the value to NATO of U.S. defense spending has not been confined to the 1980s. Consequently, when the U.S. attempts to use the U.S. defense spending share as a criterion for judgment of the defense efforts of its NATO alliance partners, it is hardly surprising that it meets resistance.

One reason for the persistence and importance of discounting is that while defense resources can be counted, adjustment for quality differences and aggregation of them into an index of contribution to alliance military capability are no easy matter. Moreover, varying combinations of defense resources will yield different baskets of military services, which will be valued differently by alliance members even if total costs are comparable. And differences among nations in terms of the efficiency with which they transform expenditures and resources into real military capabilities, while difficult to measure, nonetheless present an additional reason for nations to discount the spending of others. Thus, discounting is not merely an excuse for attempts to obtain a free ride on the defense efforts of others. The perceived value placed by alliance members on individual and collective defense efforts is a crucial component of the "fairness" dimension of the burden-

⁹William A. Niskanen, Jr., "More Defense Spending for Smaller Forces: What Hath DoD Wrought?", Cato Institute Policy Analysis, No. 110, July 29, 1988.

sharing problem. It is wholly legitimate for nations to judge the collective value of others' contributions if the latter are to be used as a criterion for burden-sharing.

Since decisions within NATO about defense spending and force structures are made by individual nations driven by national interests, discounting is inevitable. It is inevitable because of slippage between spending and the provision of real military resources. It is inevitable because individual nations judge the relevance of others' contributions differently. And it is inevitable because of controversy over the strategic value of specific national defense programs. These can be termed the "efficiency," "relevance," and "strategic value" sources of discounting.

Efficiency

There exists a vast literature, particularly in the United States, on defense procurement and manpower policy, much of it inspired by purported slippage between defense spending and the value of the resulting defense resources obtained. In the United States, the huge size of the defense sector, its worldwide configuration, and the central importance of technology and defense capital formation in the defense budget have combined to elevate defense "efficiency" analysis virtually into a separate social science. There is wide agreement that procurement deficiencies are significant and that boom/bust spending cycles have imposed significant inefficiency costs. Although all NATO members have procurement problems and other sources of inefficiency, the scope and complexity of the U.S. procurement process, combined with the marked variability of U.S. defense budgets, result in a level of U.S. defense spending that appears high relative to the real military resources obtained. This perception is consistent with data, reviewed in Sec. III, indicating sharply different proportional U.S. and European contributions to the collective defense effort when measured by the provision of real defense resources rather than by spending.

Relevance

With the exception of the FRG, the major NATO partners devote significant shares of their military resources to pursuit of foreign policy and defense objectives outside Europe. The United States is preeminent in this regard, maintaining important (and costly) security efforts for Asia, the Middle East, and Latin America. France has security interests in Africa, and the United Kingdom in the Falklands and other remnants of the British Empire, as well as in Northern Ireland.

To a degree, such commitments support and are consistent with NATO objectives (broadly conceived), and perhaps are so valued by other NATO partners. But that degree is limited: such expenditures are not valued by others as fully as other expenditures contributing to narrower NATO requirements. As a worldwide competitor of the USSR, the United States devotes relatively more of its defense efforts to such non-NATO objectives. Some of the military resources used for those purposes clearly could be used for NATO objectives as well, but others probably could not, or not very efficiently. In any event, such "fungible" military resources are likely to be more costly than those that are more specialized. The ambiguities inherent in determining the relevance of given resources for NATO are illustrated well by the difficulties inherent in estimating the share of U.S. defense spending attributable to the defense of Europe.

Strategic Value

Edward Luttwak has noted that

at each of its levels, strategy . . . determines the "outputs" of deterrence and fighting strength that we can actually obtain from the inputs we pay for. And even the most minor errors of strategy can easily cost much more than all the fraud, waste, and mismanagement that Congress and the Pentagon seek to reduce.¹⁰

In a burden-sharing context, the least measurable but most important source of discounting is the inescapable disagreement over the goals and value of U.S. military spending. At various times U.S. strategy has been viewed as too confrontational, too likely to lead to an "arms race," or as poorly conceived. As an example, many Europeans—and many Americans—view the 600-ship goal for the Navy as of little relevance for NATO or for any coherent worldwide military strategy. A recent German comment makes the point clearly with respect to deterrence generally:¹¹

Most research on NATO is based on the mistaken assumption that what is good for one nation will also benefit the others. The current debate on deterrence suggests that the requirements for the credibility of deterrence differ in the United States and Western Europe. To deplore this debate or call for greater risk-sharing on the part of the allies does not solve the problem.

¹⁰Edward Luttwak, *The Pentagon and the Art of War*, Simon & Schuster, New York, 1985, p. 140.

¹¹Helga Haftendorn, "The State of the Field: A German View," *International Security*, Fall 1988, p. 181.

Questions of political and military strategy are important matters about which sovereign states inevitably differ, even when sharing membership in a common alliance, and such disagreements are legitimate sources of variation in defense spending. An obligation to provide "equitable" contributions to the collective security effort does not mean that spending burdens have to be equal or proportional since countries that perceive a relatively smaller Soviet threat, or which believe that the contribution of increased or enhanced NATO defenses to deterrence of Soviet aggression is small, will not value the common defense effort as much as those who are more concerned about the threat or are more persuaded of the usefulness of higher NATO expenditures.¹² Even though European members of NATO have a keener interest in their own security than does the United States, their view of the optimal level of NATO defense efforts may be lower than those of the United States if they do not share U.S. perceptions of the Soviet threat. As a consequence, the Europeans may not spend proportionally as much on defense, and can be compelled to do so only for extrinsic reasons. If, for example, European members of NATO are concerned about the fragility of the U.S. commitment to NATO, they may choose to spend relatively more on defense than they think is appropriate in order to defuse U.S. political pressures. Such tactical increases in defense spending tend not to be durable unless national strategic convictions themselves change. The not very surprising fate of the 1978 NATO commitment to increase real defense spending 3 percent per year is a good illustration of the fact that such nonautonomous defense spending increases are unlikely to be sustained.

The recent report of the Schroeder panel¹³ addresses this issue by urging a major effort to seek agreement on a common NATO perception of the Soviet threat, arguing that:

If, after discussions . . . the U.S. perception of the threat appears to be "closer to reality," the allies should increase their defense spending accordingly. If . . . allied perceptions appear to be "closer to reality" . . . the United States, if it can still adequately meet the threat, should reduce its spending—including its troops overseas.

But this argument begs the real question: What if no consensus on the Soviet threat (or the deterrent value of conventional defense) is

¹²This can be seen as a particular instance of efficient pricing for collective goods, the classic exposition of which may be found in Erik Lindahl, "Just Taxation—A Positive Solution," in R. A. Musgrave and A. T. Peacock (eds.), *Classics in the Theory of Public Finance*, St. Martin's Press, New York, 1958.

¹³See *Report of the Defense Burden-sharing Panel of the Committee on Armed Services*, House of Representatives, Washington, D.C., August 1988, pp. 17-18.

attainable? Experience suggests that even the most determined diplomatic efforts will not result in a true consensus on the nature and urgency of the Soviet threat or on how best to deter it. Differences of view on these issues between the United States and its NATO allies are deeply rooted and unlikely to disappear. The real issue, then, is how the United States should conduct itself in the absence of strategic consensus and in the presence of European defense efforts seemingly less determined than our own. The right course of action, indeed the only recourse, for the leader of a voluntary alliance of democratic states is to continue to urge its convictions onto its allies and to act in accordance with them itself. This is consistent, in extremis, with unilateral cutbacks in spending and troop commitments because of pressing economic concerns or shifting strategic priorities. Leadership does not preclude financial prudence or strategic flexibility.

Alliance leadership does preclude questioning the legitimacy of allies' concerns and threatening unilateral cutbacks in order to frighten them into additional contributions. Even if an alliance leader is persuaded that "free-riding" by some is a real problem, this sort of poker playing, however necessary in negotiating with adversaries, is likely to be destructive in the long run in relationships with allies.¹⁴ Any temporary increases in contributions are likely to be more than matched by erosion of the political cohesion engendered by accepting in good faith the concerns of other members of the alliance, and seeking to change their behavior by persuasion rather than coercion.

In short, the United States is likely to serve its own ends best by sustaining its European defense efforts at levels appropriate to its own assessment of their value, until such time as it concludes that our allies' defense reticence is so pronounced that the strategic value of NATO has been degraded. The record indicates, however, that in fact NATO members are making more substantial contributions to NATO's defense efforts than relative spending levels suggest—as the next section documents. The final section of this report then sketches in the broad outlines of what a determined good-faith approach to burden-sharing might consist of in present circumstances.

¹⁴Moreover, it is unlikely as a practical matter that the United States can be as persuasive as their European allies can be with the smaller NATO members. Although U.S. pressure on the smaller countries may bring headlines and may well be welcomed by beleaguered local defense establishments looking for support in their own domestic budget disputes, it is unlikely to be very effective. The growing intensity of intra-European relations within the European Community offers far more promise to reduce free-riding behavior in Europe than does U.S. pressure on individual countries.

III. SPENDING AND MILITARY RESOURCE MEASURES OF RELATIVE "BURDEN"

While some recent analyses of the NATO burden-sharing debate have examined both financial and resource measures of contribution,¹ comparisons of relative financial contributions have dominated the public discussion, particularly among observers arguing that the United States is bearing a disproportionately large share of the NATO burden. The *Chicago Tribune*, for example, has editorialized as follows.²

. . . while the U.S. spent 6.5 percent of its gross national product on defense last year, Britain was next highest at 4.8 percent, more than a quarter below the U.S. level. Germany spent 3.2 percent; Denmark and Canada came up with a mere 2 percent each.

House Budget Committee Chairman William H. Gray has complained about a "significant imbalance" in U.S. and allied contributions as measured by defense spending as a proportion of GNP.³ Representative Patricia Schroeder argues that our allies have been able "to neglect their own NATO commitments," and concludes⁴ that this has happened because:

" . . . 60 percent of [the U.S.] defense budget has gone to NATO defense commitments."

While real U.S. defense spending increased by 5.7 percent during 1978 through 1985, "our allies did not increase their defense spending by the modest 3 percent they had agreed upon."

By CBO estimates, the U.S. spends \$1115 per capita for defense, while France spends \$511, Britain \$488, and West Germany \$453.

¹See, for example, Frank C. Carlucci, *Report on Allied Contributions to the Common Defense*, Department of Defense, April 1988; and Gordon Adams and Eric Munz, *Fair Shares: Bearing the Burden of the Alliance*, Defense Budget Project, Washington, D.C., March 1988. Both of these reports present valuable data on relative contributions of military goods and services as well as spending, in part as an effort to reduce the adverse implications of comparisons of the defense spending shares of GNP. These attempts to broaden the criteria used for assessment of burden-sharing have achieved only limited success, and have had little impact on the public debate. The Schroeder report provides some measures of contribution in terms of military outputs, but does not delve very deeply into the implications of differences in relative financial and real contributions.

²June 13, 1988, p. 14.

³As reported in the *Washington Post*, March 2, 1988, p. 18.

⁴New York *Times*, April 6, 1988. Note that there is a certain circularity to Schroeder's argument, in that she seems to define "neglect" in terms of the financial input data, and then uses those data to demonstrate such neglect.

While "the U.S. spends nearly 7 percent of GDP on the defense of NATO and Japan . . . the allies (collectively) spend an average of only 3.3 percent."

As noted above, the widespread use of expenditures as a measure of relative contributions is a natural result of the difficulty in construction and interpretation of more relevant resource or output measures. Moreover, whereas the problems inherent in use of financial measures of relative contribution are substantial, spending is far from irrelevant to analysis of burden-sharing. Accordingly, it is useful to examine the divergent implications of NATO "burden" comparisons as measured alternatively by spending and military resource indices. Table 2 presents 1986 data for each of the NATO members and for NATO as a whole on total defense spending, total gross domestic product (GDP), and defense spending as a proportion of GDP.

The data in Table 2 are typical of those giving rise to the complaint that the U.S. share of the NATO burden is disproportionately high. The total U.S. defense burden as a proportion of GDP is substantially higher

Table 2
1986 DEFENSE SPENDING, GDP, AND DEFENSE/GDP

Nation	Defense Spending ^a	GDP ^a	Defense/GDP (Percent)
United States	\$281.1	\$4152	6.8
FRG	27.7	895	3.1
France	28.5	724	3.9
Italy	13.5	600	2.2
UK	27.3	546	5.1
Belgium	3.4	113	3.0
Canada	7.9	364	2.2
Denmark	1.7	82	2.0
Greece	2.4	40	6.1
Luxembourg	0.05	5	1.1
Netherlands	5.3	174	3.1
Norway	2.2	69	3.1
Portugal	0.9	29	3.2
Spain	6.0	228	2.6
Turkey	2.8	58	4.8
NATO total	\$410.7	\$8079	5.1

SOURCE: Department of Defense.

NOTE: Defense spending and GDP columns may not sum due to rounding.

^aBillions of 1986 dollars derived at 1986 exchange rates.

than those of the other NATO members, which average 3.3 percent of GDP. In short, these data on relative contributions as measured by spending seemingly illustrate a disproportionately heavy U.S. burden of European defense relative to those of our NATO allies.⁵ Note, however, that if we adjust for the estimate used by the Department of Defense of the proportion of U.S. defense spending attributable to NATO commitments, the U.S. average falls to less than 4.1 percent of GDP.⁶ This still exceeds the non-U.S. average as well as those of the FRG, France, and Italy, but is exceeded by that of the United Kingdom.

The data in Table 2 are for 1986. As the exchange value of the dollar was higher in that year than in, say, 1987, the data tend to increase the size of the U.S. contribution relative to those of the allies as measured in dollars. In years of a weaker dollar, allied spending in their own currencies would be equivalent to more dollars, so that the comparisons would look more favorable to them. Thus, the choice of a particular year for comparison of spending affects the computation of relative "burdens" as measured in dollars because of exchange rate variability. This is yet another reason that "burden" comparisons conducted in terms of spending can be misleading.

Table 3 gives data for each of the NATO members on defense spending as a proportion of the NATO total before and after adjustment for the estimate used by the Department of Defense of U.S. defense spending attributable to NATO commitments, and on GDP as a proportion of the NATO total. These data often are used as a crude measure of financial contributions relative to "ability" to contribute.

Table 4 presents the ratios of relative contributions as a proportion of the NATO total (defense/NATO and adjusted defense/NATO)

⁵As discussed in Sec. II, however, "fairness" depends not only upon relative contributions but also upon relative valuations of the military services provided by the collective defense effort. Such valuations are determined by the nations' interests in security from external aggressors and by the perceived magnitude of the threat from such potential aggressors.

⁶Military units to some degree are fungible, that is, they can be used for a variety of military functions in different geographic regions. Thus, U.S. units that ostensibly are dedicated to European defense actually are likely to be available in other areas as well. Much U.S. defense spending, then, is of a "joint product" nature, and allocation of costs across joint products must be arbitrary to a significant degree. The Department of Defense uses an estimate that NATO commitments account for 60 percent of the U.S. defense budget. That figure seems high, since it is difficult to believe that the U.S. defense budget would fall by 60 percent were the U.S. interest in European security to fall to zero. The 60 percent figure is likely to capture all direct and at least some "overhead" costs of all units nominally committed to European defense. To the extent that the estimate is high, the adjusted U.S. defense burden overstates the burden of the U.S. contribution to European defense. An excellent discussion of the analytic difficulties inherent in determination of the share of U.S. defense spending devoted to the defense of Europe is contained in Kevin Lewis, *Declining DoD Budgets and the U.S. Contribution to NATO's Conventional Defense*, N-2874-AF, forthcoming.

Table 3
**1986 DEFENSE SPENDING AND GDP AS A PROPORTION
OF NATO TOTAL
(Percent)**

Nation	Adjusted		
	Defense/NATO	Defense/NATO	GDP/NATO
United States	68.4	56.6	51.4
FRG	6.7	9.3	11.1
France	6.9	9.6	9.0
Italy	3.3	4.5	7.4
UK	6.7	9.2	6.8
Belgium	0.8	1.1	1.4
Canada	1.9	2.6	4.5
Denmark	0.4	0.6	1.0
Greece	0.6	0.8	0.5
Luxembourg	0.01	0.02	0.1
Netherlands	1.3	1.8	2.1
Norway	0.5	0.7	0.9
Portugal	0.2	0.3	0.4
Spain	1.5	2.0	2.8
Turkey	0.7	0.9	0.7
NATO total	100.0	100.0	100.0

SOURCE: Department of Defense.

divided by the crude measure of ability to contribute (GDP/NATO). The figures are for 1986.

Before adjustment for the estimate used by the Department of Defense of the share of U.S. defense spending attributable to NATO commitments, the U.S. proportionate contribution in 1986 exceeded its proportionate "ability" to contribute by about a third. This ratio for the United States exceeded those of all the other NATO partners; only Greece and Turkey had ratios at or above 1.00. However, this conclusion changes somewhat after exclusion of U.S. defense spending attributed by the Department of Defense to U.S. interests outside NATO. The U.S. ratio of adjusted defense share to GDP share falls to 1.10; this is only slightly higher than that of France, and below that of the United Kingdom. The ratios of all the other NATO allies rise.

Tables 2 through 4 present defense spending and GDP data only for 1986. Since intra-NATO discussions of defense effort often focus upon spending growth—as exemplified by the official goal (now elapsed) adopted in 1977 of 3 percent real spending growth for each of the allies—Table 5 gives data on spending growth for each of the nations for 1961–1977 and 1978–1986.

Table 4
1986 CONTRIBUTIONS RELATIVE TO "ABILITY"
TO CONTRIBUTE

Nation	Defense/NATO/ GDP/NATO	Adjusted Defense/NATO/ GDP/NATO
United States	1.33	1.10
FRG	0.60	0.84
France	0.77	1.07
Italy	0.45	0.61
UK	0.99	1.35
Belgium	0.57	0.79
Canada	0.42	0.58
Denmark	0.40	0.60
Greece	1.20	1.60
Luxembourg	0.10	0.20
Netherlands	0.62	0.86
Norway	0.56	0.78
Portugal	0.50	0.75
Spain	0.54	0.71
Turkey	1.00	1.29

SOURCE: Table 3.

Average annual real spending growth for the United States was the lowest of all the allies during the earlier period, which included both the rise and decline of spending for the Vietnam war. Average growth for the United States was the highest in NATO during the latter period, which coincides roughly with the surge in U.S. defense spending following the Soviet invasion of Afghanistan and the assumption of office by the Reagan Administration. Moreover, such nations as Canada and Luxembourg, with spending as a proportion of GDP far below average in Table 2, have among the highest growth rates of real spending in Table 5, depending upon the choice of time period. This suggests that spending indices of relative burdens can be misleading, or at a minimum are sensitive to choice of time period and other parameters independent of exchange rate shifts. One way to circumvent such problems is to examine indices of military resource contribution, since such measures result in substantial part from the accumulation of spending over time. And, as noted above, it is contributions in terms of real military resources that are of more fundamental interest.

Table 5

AVERAGE ANNUAL GROWTH OF REAL
DEFENSE SPENDING
(Percent)

Nation	1961-1977	1978-1986
United States	0.13	5.82
FRG	2.65	0.83
France	2.00	1.57
Italy	3.02	3.35
UK	0.56	3.32
Belgium	3.00	-2.75
Canada	0.25	4.15
Denmark	2.80	1.02
Greece	8.90	1.50
Luxembourg	3.00	4.20
Netherlands	3.00	1.63
Norway	4.68	3.20
Portugal	4.43	1.15
Spain	n.a. ^a	n.a.
Turkey	7.38	3.09
NATO average	0.79	4.50

SOURCE: Adams and Munz, fn. 1 above.

^an.a. = not applicable.

Accordingly, Table 6 gives data on population and military manpower on active duty for each of the NATO members in 1986. The data on military manpower provide one crude index of real output contribution to the collective NATO defense effort. From Table 6 we see that U.S. military manpower as a proportion of total population is about average for NATO as a whole, and that the U.S. share of total NATO manpower is lower than its share of total NATO population. Thus, comparison of relative burdens in terms of this crude index of real military resources yields a different conclusion from that offered by comparison in terms of spending.

Deployment of main battle tanks (MBTs) and jet fighters in the force inventory is another index of military resources contributed to the collective defense effort. Table 7 presents data on numbers of main battle tanks and tactical jet fighters⁷ in each of the nations' force structures in 1985. The U.S. real contribution in terms of main battle

⁷Included under the heading "Jet Fighters" are ground attack fighters, air defense fighters, interceptors, fighter-bombers, operational conversion units, and the naval equivalents.

Table 6
1986 POPULATION AND MILITARY MANPOWER

Nation	Population (Millions)	Population/ NATO (Percent)	Active Duty Manpower (Millions)	Manpower/ Population (Percent)	Manpower/ NATO (Percent)
United States	241.6	37.7	2.26	0.94	36.6
FRG	61.0	9.5	0.50	0.81	8.1
France	55.4	8.6	0.56	1.01	9.1
Italy	57.2	8.9	0.53	0.92	8.6
UK	56.8	8.9	0.33	0.58	5.3
Belgium	9.9	1.5	0.11	1.09	1.8
Canada	25.7	4.0	0.08	0.33	1.3
Denmark	5.1	0.8	0.03	0.55	0.5
Greece	10.0	1.6	0.20	2.02	3.2
Luxembourg	0.4	0.06	0.001	0.33	0.02
Netherlands	14.6	2.3	0.11	0.73	1.8
Norway	4.2	0.7	0.04	0.87	0.6
Portugal	10.2	1.6	0.10	0.98	1.6
Spain	38.5	6.0	0.48	1.24	7.8
Turkey	50.8	7.9	0.86	1.69	13.9
NATO total	641.4	100.0	6.18	0.95	100.0

SOURCE: Department of Defense.

NOTE: Columns may not sum due to rounding.

tanks is lower as a proportion of all NATO tanks than either its total or adjusted spending as a proportion of all NATO spending.⁸ The U.S. real contribution in terms of jet fighters is lower as a proportion of the NATO total than its share of total NATO spending, but higher than its share of total NATO spending if adjusted for the estimate used by the Department of Defense of U.S. spending attributable to NATO commitments. Clearly, however, if some substantial portion of U.S. spending ought to be allocated outside of NATO, then some part of U.S. equipment ought to be treated similarly.

One problem with comparisons of contribution in terms of numbers of tanks and jets is the heterogeneous age and quality mix of equipment found in the inventories of alliance members. One crude way to adjust for the varying sophistication of equipment is to discount older

⁸Note that spending in Tables 2 and 3 is for 1986, whereas the tank and jet totals in Table 6 are for 1985. Adams and Munz, fn. 1 above, provide data on shares of NATO main battle tanks for 1986 that are very close to the figures in Table 7. Similarly, the figures on shares of combat aircraft provided by Adams and Munz and by Carlucci, fn. 1 above, yield share figures for 1986 similar to those in Table 7.

Table 7
MAIN BATTLE TANKS AND TACTICAL JET FIGHTERS, 1985

Nation	MBTs	MBTs/NATO (Percent)	Fighters	Fighters/NATO (Percent)
United States	14139	45.6	5460	62.0
FRG	4662	15.0	597	6.8
France	1269	4.1	575	6.5
Italy	1770	5.7	243	2.8
UK	1030	3.3	366	4.2
Belgium	334	1.1	181	2.1
Canada	114	0.4	137	1.6
Denmark	208	0.7	86	1.0
Greece	1641	5.3	262	3.0
Luxembourg	0	0.0	0	0.0
Netherlands	1146	3.7	218	2.5
Norway	100	0.3	85	1.0
Portugal	66	0.2	94	1.1
Spain	779	2.5	160	1.8
Turkey	3752	12.1	347	3.9
NATO total	31010	100.0	8811	100.0

SOURCE: International Institute of Strategic Studies, *The Military Balance*, 1985-1986.

NOTE: Columns may not sum due to rounding.

equipment relative to newer vintages. Thus, quality is assumed to be a function of age, with discount rates of 4 percent and 5 percent per year for tanks and jets, respectively.⁹

Table 8 presents data on numbers of tanks and jet fighters adjusted for the age of the equipment. As with the data in Table 7 unadjusted for age, the U.S. share of MBTs again is lower than its share of total NATO military spending, adjusted or unadjusted for NATO commitments; and the U.S. share of jet fighters is lower than its share of unadjusted NATO spending, but higher than its share of total adjusted spending by NATO. Again, however, this latter ratio of shares is likely to be biased upward, because some U.S. equipment, like some U.S. spending, must be intended for provision of military services outside NATO.

⁹This is the procedure used in Benjamin Zycher and Tad Daley, *Military Dimensions of Communist Systems*, The RAND Corporation R-3593-USDP, June 1988, for estimation of an index that reasonably can be assumed to be correlated highly with the technical sophistication of the military capital stock. The data in Table 8 are taken from that report, with the exception of the figures for the United States and Canada.

Table 8
MAIN BATTLE TANKS AND TACTICAL JET FIGHTERS, 1985,
ADJUSTED FOR AGE

Nation	MBTs	MBTs/NATO		Fighters/NATO (Percent)
		(Percent)	Fighters	
United States	6964.0	47.2	2612.3	61.1
FRG	2739.6	18.6	362.9	8.5
France	653.5	4.4	248.6	5.8
Italy	772.7	5.2	119.5	2.8
UK	656.3	4.4	150.3	3.5
Belgium	172.5	1.2	112.7	2.6
Canada	52.0	0.4	81.1	1.9
Denmark	89.8	0.6	52.6	1.2
Greece	497.1	3.4	120.1	2.8
Luxembourg	0.0	0.0	0.0	0.0
Netherlands	647.8	4.4	134.0	3.1
Norway	46.1	0.3	57.0	1.3
Portugal	28.1	0.2	30.8	0.7
Spain	312.6	2.1	71.6	1.7
Turkey	1136.1	7.7	124.2	2.9
NATO total	14768.2	100.0	4277.7	100.0

SOURCE: Benjamin Zycher and Tad Daley, *Military Dimensions of Communist Systems*, The RAND Corporation, R-3593-USDP, June 1988. Figures for the United States and Canada are derived from authors' computations.

NOTE: Columns may not sum due to rounding.

Just as spending is an input into the combination of manpower and equipment into force structures, so the latter are inputs into the supply of final military services or "deterrence." However, indices of military services or effectiveness pose great difficulty in measurement and interpretation. One such output index—widely used despite recognized shortcomings—is division-equivalent firepower (DEF) provided by a unit, group of units, or all units in a nation's force structure. Although crude, DEFs provide a measure of the relative contributions of ground force capability by each member of the alliance. Table 9 provides data on DEFs for the central front and DEF shares in NATO.

The DEF shares display the same general pattern exhibited by the U.S. share of manpower, tanks, and jet aircraft. The DEF shares are lower than the U.S. shares of total NATO defense spending, adjusted NATO spending, or GDP. Table 10 shows the shares of total age-adjusted main battle tanks and jet fighters; DEF scores as a ratio of

Table 9
NATO DIVISION-EQUIVALENT FIREPOWER

Nation	(1) Central Front DEF ^a	(2) Central Front DEF/NATO ^b	(3) Total DEF/NATO ^c
United States	28.30	49.8	40.29
FRG	15.69	27.6	12.57
France	n.a. ^d	n.a.	6.40
Italy	n.a.	n.a.	4.53
UK	8.15	14.3	5.01
Belgium	2.04	3.6	1.79
Canada	n.a.	n.a.	1.10
Denmark	n.a.	n.a.	1.86
Greece	n.a.	n.a.	6.76
Luxembourg	0.04	0.1	0.01
Netherlands	2.62	n.a.	3.40
Norway	n.a.	n.a.	1.54
Portugal	n.a.	n.a.	0.85
Spain	n.a.	n.a.	3.91
Turkey	n.a.	n.a.	9.98
NATO total	56.84	100.0	100.00

^aIn levels; from Adams and Munz, fn. 1 above.

^bIn percent; calculated from column (1).

^cIn percent; from Department of Defense

^dn.a. = not applicable.

the nations' shares of total GDP; and the nations' military manpower shares as a ratio of their population shares. These ratios are crude measures of contribution relative to "ability" to contribute; the U.S. ratio lies below 1.0 in three of the four, despite a spending burden greater than those of the allies. This is reinforced by the data in Table 11, which presents the NATO nations' shares of total age-adjusted NATO main battle tanks, jet fighters, and DEF scores as a proportion of their shares of total (unadjusted) NATO defense spending. Despite a spending share higher than average, the U.S. contribution share measured in terms of these real resource indices is below average.

Another RAND research project has estimated military capital stocks for the United States, United Kingdom, FRG, and France.¹⁰ The military capital stock is an aggregated measure of real resource

¹⁰Charles Wolf, G. Hildebrandt, M. Kennedy, D. Henry, K. Terasawa, K. C. Yeh, B. Zycher, A. Bamezai, and T. Hayashi, *Long Term Economic and Military Trends, 1950-2010*, The RAND Corporation, N-2757-USDP, April 1989. Table 8 of that study provides estimates of the military capital stock for each decennial year. The figures for the other years in the tables below are unpublished estimates prepared for that study.

Table 10

MILITARY RESOURCE CONTRIBUTION SHARES RELATIVE TO GDP SHARES

Nation	MBT Share/ GDP Share ^a	Jet Share/ GDP Share ^a	DEF Share/ GDP Share ^b	Manpower Share/ Population Share ^c
United States	0.92	1.19	0.78	0.97
FRG	1.68	0.77	1.13	0.85
France	0.49	0.64	0.71	1.06
Italy	0.70	0.38	0.61	0.97
UK	0.65	0.51	0.74	0.60
Belgium	0.86	1.86	1.28	1.20
Canada	0.09	0.42	0.24	0.33
Denmark	0.60	1.20	1.86	5.63
Greece	6.80	5.60	13.52	2.00
Luxembourg	0.00	0.00	0.10	0.33
Netherlands	2.10	1.48	1.62	0.78
Norway	0.33	0.69	1.71	0.86
Portugal	0.50	1.75	2.13	1.00
Spain	0.75	0.61	1.40	1.30
Turkey	11.00	4.14	14.26	1.76

^aDerived from Tables 2 and 7.^bDerived from Tables 2 and 8.^cDerived from Table 5.

Table 11

MILITARY RESOURCE CONTRIBUTION SHARES RELATIVE
TO SPENDING SHARES

Nation	MBT Share/ Spending Share ^a	Jet Share/ Spending Share ^a	DEF Share/ Spending Share ^b
United States	0.69	0.89	0.59
FRG	2.78	1.27	1.88
France	0.64	0.84	0.93
Italy	1.58	0.85	1.37
UK	0.66	0.52	0.75
Belgium	1.50	3.25	2.24
Canada	0.21	1.00	0.58
Denmark	1.50	3.00	4.65
Greece	5.67	4.67	11.27
Luxembourg	0.00	0.00	1.00
Netherlands	3.38	2.38	2.62
Norway	0.60	2.60	3.08
Portugal	1.00	3.50	4.25
Spain	1.40	1.13	2.61
Turkey	11.00	4.14	14.26

^aDerived from Tables 2 and 7.^bDerived from Tables 2 and 8.

contribution to the collective defense effort, and the data reinforce the disaggregated real resource measures discussed above. Table 12 gives estimates of the military capital stocks for the four countries for the years 1950 through 1986. Table 13 presents the shares of total military capital for the four nations, while Table 14 presents military spending for each nation as a share of the total for the four. Table 15 shows the ratio of the military capital share to the military spending share. The upshot of these data is as follows: There has been since the early 1960s some variation in the U.S. share of military spending as a proportion of the total for the four nations, but the net change over the period has been an increase from about 70 percent or 71 percent to over 75 percent. However, the U.S. share of total military capital (Table 12) has declined steadily (except in the early and mid-1980s) from somewhat more than 76 percent to somewhat more than 72 percent. This is reflected in Table 15, in which the U.S. ratio declines fairly steadily from about 1.08 in 1960 to about 0.95 in 1986.¹¹

In short, there is a disparity in inferences to be drawn from comparisons of "burdens" measured alternatively in spending and military resource terms. The measured European share of the collective burden rises significantly upon a shift in focus from spending to military resource indices of contribution. This observation is reinforced by comparison of the ratios in Tables 10, 11, and 15 with the figures in Tables 1 through 3. First, measures of contribution in terms of spending burden yield substantially different inferences about relative "burdens" than do measures of contribution in terms of military resources. Second, the U.S. contribution, while seemingly disproportionate in spending terms, does not seem high relative to European contributions when measured in military resource terms, although the choice of resource measure affects the proportionate "burden" borne by various nations. Thus, the public discussion of burden-sharing in the United States, by concentrating on expenditure measures of relative contributions, tends to overstate the U.S. contribution relative to that of the allies in terms of more relevant resource indices. Third, by any of the real output measures discussed above, our European allies contribute very substantially to the provision of final military services in Europe, although, again, the choice of index affects the measurement of relative contributions. No index can capture all or even most attributes of military services, or, more fundamentally, of military contributions to deterrence. Since it is likely to be efficient for nations to specialize in their provision of various military services, different indices tend to

¹¹Note that the estimates in Wolf et al. are derived with indices of purchasing power parity rather than with exchange rates.

Table 12

BIG FOUR MILITARY CAPITAL
(Billions of 1986 dollars)

Year	U.S.	UK	FRG	France	Total
1950	524.8	78.0	0.0	51.8	654.6
1951	540.2	82.2	0.0	53.6	676.0
1952	588.4	88.2	0.0	56.8	733.4
1953	644.4	93.3	0.0	60.0	797.7
1954	657.9	97.5	3.0	61.8	820.2
1955	674.2	100.9	6.2	63.1	844.4
1956	675.0	104.3	9.2	65.3	853.8
1957	676.7	106.9	12.8	67.3	863.7
1958	674.1	109.2	15.2	69.2	867.7
1959	676.6	111.3	19.2	71.4	878.5
1960	677.2	113.6	23.5	73.6	887.9
1961	674.9	115.8	27.8	75.8	894.3
1962	685.0	117.9	33.3	78.1	914.3
1963	701.0	120.0	39.3	79.8	940.1
1964	711.0	122.1	44.6	81.5	959.2
1965	712.0	124.1	49.4	83.3	968.8
1966	721.3	125.7	53.7	85.0	985.7
1967	734.9	127.4	58.0	86.8	1007.1
1968	736.1	128.7	61.4	88.5	1014.7
1969	751.3	129.3	64.9	89.8	1035.3
1970	746.8	130.1	67.9	90.9	1035.7
1971	743.1	131.2	71.0	92.0	1037.3
1972	731.5	132.3	74.3	93.1	1031.2
1973	720.1	133.4	77.7	94.4	1025.6
1974	715.6	134.3	81.4	95.7	1027.0
1975	715.7	135.3	84.8	97.1	1032.9
1976	720.1	136.2	88.1	98.7	1043.1
1977	723.0	136.9	91.2	100.6	1051.7
1978	732.6	137.5	94.4	102.7	1067.2
1979	741.8	138.2	97.7	104.8	1082.5
1980	755.0	139.2	100.9	107.1	1102.2
1981	767.7	140.2	102.8	109.6	1120.3
1982	805.0	141.6	104.5	112.0	1163.1
1983	845.8	142.9	106.2	114.5	1209.4
1984	887.4	144.5	107.8	116.8	1256.5
1985	951.8	142.8	109.3	116.5	1320.4
1986	1008.1	148.5	114.9	122.6	1394.1

SOURCE: Wolf et al.

NOTE: Rows may not sum due to rounding.

Table 13

**SHARES OF BIG FOUR MILITARY CAPITAL
(Percent)**

Year	U.S.	UK	FRG	France
1950	80.2	11.9	0.0	7.9
1951	79.9	12.2	0.0	7.9
1952	80.2	12.0	0.0	7.7
1953	80.8	11.7	0.0	7.5
1954	80.2	11.9	0.4	7.5
1955	79.8	11.9	0.7	7.5
1956	79.1	12.2	1.1	7.6
1957	78.3	12.4	1.5	7.8
1958	77.7	12.6	1.8	8.0
1959	77.0	12.7	2.2	8.1
1960	76.3	12.8	2.6	8.3
1961	75.5	12.9	3.1	8.5
1962	74.9	12.9	3.6	8.5
1963	74.6	12.8	4.2	8.5
1964	74.1	12.7	4.6	8.5
1965	73.5	12.8	5.1	8.6
1966	73.2	12.8	5.4	8.6
1967	73.0	12.7	5.8	8.6
1968	72.5	12.7	6.1	8.7
1969	72.6	12.5	6.3	8.7
1970	72.1	12.6	6.6	8.8
1971	71.6	12.6	6.8	8.9
1972	70.9	12.8	7.2	9.0
1973	70.2	13.0	7.6	9.2
1974	69.7	13.1	7.9	9.3
1975	69.3	13.1	8.2	9.4
1976	69.0	13.1	8.4	9.5
1977	68.7	13.0	8.7	9.6
1978	68.6	12.9	8.8	9.6
1979	68.5	12.8	9.0	9.7
1980	68.5	12.6	9.2	9.7
1981	68.5	12.5	9.2	9.8
1982	69.2	12.2	9.0	9.6
1983	69.9	11.8	8.8	9.5
1984	70.6	11.5	8.6	9.3
1985	72.1	10.8	8.3	8.8
1986	72.3	10.7	8.2	8.8

SOURCE: Table 12.

NOTE: Rows may not sum to 100.0 due to rounding.

Table 14
SHARES OF BIG FOUR MILITARY SPENDING
(Percent)

Year	U.S.	UK	FRG	France
1950	66.8	22.0	0.0	11.1
1951	76.5	15.3	0.0	8.3
1952	77.3	14.4	0.0	8.3
1953	78.5	13.2	0.0	8.3
1954	73.9	12.6	4.9	7.5
1955	73.0	13.8	6.0	7.2
1956	71.8	13.8	5.9	8.7
1957	73.2	12.2	6.4	8.3
1958	75.1	11.8	4.8	8.3
1959	72.2	11.6	7.6	8.7
1960	70.4	12.2	8.3	9.1
1961	70.9	11.8	8.3	9.0
1962	70.6	11.1	9.8	8.5
1963	69.6	11.3	11.0	8.1
1964	69.2	11.8	10.6	8.4
1965	69.2	12.0	10.2	8.6
1966	73.0	10.4	8.7	7.9
1967	75.2	9.4	8.0	7.3
1968	77.0	9.0	6.9	7.1
1969	76.6	8.7	7.6	7.1
1970	75.4	9.5	7.7	7.4
1971	73.2	10.6	8.3	7.9
1972	74.6	9.8	8.1	7.4
1973	72.4	10.5	9.0	8.1
1974	71.4	10.4	9.7	8.5
1975	70.7	10.9	9.6	8.8
1976	70.2	10.8	9.8	9.3
1977	70.2	10.5	9.6	9.7
1978	69.9	10.3	9.8	10.1
1979	69.8	10.3	9.7	10.1
1980	70.2	10.2	9.6	10.0
1981	70.7	9.9	9.4	10.0
1982	71.6	9.9	8.9	9.5
1983	72.8	9.5	8.5	9.2
1984	73.7	9.4	8.1	8.8
1985	75.1	8.9	7.7	8.3
1986	75.8	8.6	7.5	8.1

SOURCE: Wolf et al.

NOTE: Rows may not sum to 100.0 due to rounding.

Table 15
BIG FOUR: RATIO OF MILITARY CAPITAL SHARE
TO MILITARY SPENDING SHARE

Year	U.S.	UK	FRG	France
1950	1.20	0.54	n.a. ^a	0.71
1951	1.04	0.80	n.a.	0.95
1952	1.04	0.83	n.a.	0.93
1953	1.03	0.89	n.a.	0.90
1954	1.09	0.94	0.08	1.00
1955	1.09	0.86	0.12	1.04
1956	1.10	0.88	0.19	0.87
1957	1.07	1.02	0.23	0.94
1958	1.03	1.07	0.38	0.96
1959	1.07	1.09	0.29	0.93
1960	1.08	1.04	0.31	0.91
1961	1.06	1.09	0.37	0.94
1962	1.06	1.16	0.37	1.00
1963	1.07	1.13	0.38	1.05
1964	1.07	1.08	0.43	1.01
1965	1.06	1.07	0.50	1.00
1966	1.00	1.23	0.62	1.09
1967	0.87	1.35	0.73	1.18
1968	0.94	1.41	0.88	1.23
1969	0.95	1.44	0.83	1.23
1970	0.96	1.33	0.86	1.19
1971	0.98	1.19	0.82	1.07
1972	0.95	1.31	0.89	1.22
1973	0.97	1.24	0.84	1.14
1974	0.98	1.26	0.81	1.09
1975	0.98	1.20	0.85	1.07
1976	0.98	1.21	0.86	1.02
1977	0.98	1.24	0.91	0.99
1978	0.98	1.25	0.90	0.95
1979	0.98	1.24	0.93	0.96
1980	0.98	1.24	0.96	0.97
1981	0.97	1.26	0.98	0.98
1982	0.97	1.23	1.01	1.01
1983	0.96	1.24	1.04	1.03
1984	0.96	1.22	1.06	1.06
1985	0.96	1.21	1.08	1.06
1986	0.95	1.23	1.11	1.09

SOURCE: Tables 13 and 14.

^an.a. = not applicable.

favor different members of the alliance in terms of measured contribution to the collective defense effort.

The data in this section reveal the inherent arbitrariness of single-valued quantitative assessments of burden-sharing, which is intrinsically a subject calling for political judgment rather than technical measurement. For example, comparisons of defense shares purporting to demonstrate, say, that Germany's defense efforts are less burdensome than those of the United States should be viewed as a starting place for discussion rather than as the answer to the argument. German defense spending as a share of GNP indeed is lower than that of the United States. But Germany drafts its recruits, while the United States has voluntary forces; this may raise budget costs per soldier in the United States. And cost is hardly the end of the matter: the German reserve system is designed to field a far larger trained increment to its armed forces in the event of emergency than is that of the United States. In addition, such "burdens" as the overflight of military aircraft and the garrisoning of foreign soldiers are far greater in Germany. On the other hand, the U.S. provision of extended deterrence to Germany and other NATO members is a burden of no small magnitude, as is the commitment of NATO generally to a doctrine of forward defense in Germany instead of other defense arrangements that might be less costly but that might not satisfy the same political requirements.

The basic problem demonstrated in this section is the great difficulty inherent in measurement of "real" contributions; our various measures used above are nothing if not crude. What the discussion does demonstrate is the utter absence of a straightforward and complete measure of relative burdens, whether financial or "real." The debate over NATO burden-sharing thus will not serve the interests of the United States or its allies unless the ambiguity is recognized and the debate placed in a broader context, to which we now turn.

IV. CONCLUSIONS: BURDEN-SHARING AND THE EVOLUTION OF NATO

Controversy over transatlantic burden-sharing has flared up recently in part because of the increased defense share of GNP in the United States occasioned by the sharp and sustained defense buildup started in 1979. However, although the U.S. defense share at its lowest remains higher than European shares, the difference in recent years is not representative of the longer-term relationship between U.S. and European defense spending. If history is a guide, this difference again will narrow sharply. Recent declines in the U.S. defense budget are consistent with this expectation. After the initial years of the Reagan defense buildup, budgetary stringencies in the United States have resulted in about a 10 percent reduction in real defense spending from 1985 levels, and the most that can be expected for over the next several years is zero real growth; further real declines are not unlikely. Future European military budgets also are likely to be unusually constrained: they are under pressure as a result of sluggish economic growth and competing political demands at a time when the Soviet threat is perceived by many to be in abeyance—and there is little likelihood that defense budget shares will increase on a sustained basis in Europe. Demographic trends in Europe are tightening the military manpower picture, thus exacerbating this outlook.

Not only has the American buildup once more proved temporary, but many of the same problems of efficiency, relevance, and strategy apparent in such previous boom-and-bust cycles have emerged again. European "discounting" of U.S. defense spending is predictably high just now when the United States is impatient with European defense penury—both developments reflect a cyclical peak in U.S. defense spending. U.S. concerns over its budget and current account deficits help fuel the flames.

The renewed dispute over transatlantic burden-sharing has come to the fore at a time when other major unresolved issues in NATO are pressing as well. NATO crises are more the rule than the exception, but this time the confluence of events really does seem to constitute a watershed: These include Gorbachev's ascendancy in the Soviet leadership and the changes he has unleashed, the forthcoming transformation of the European Economic Community (EEC) in 1992, the perception of many in the United States of the change in the nation's relative standing in the world economy, and NATO's post-INF

doctrinal and force-structure dilemmas. If ever there was a time to bear in mind Atlanticist concerns over the possible damage that too heavy-handed an approach to burden-sharing might do, this is it. On the other hand, growing prosperity in Europe together with the continuing budgetary and current account pressures in the United States, make this no time for defense-minded Europeans to neglect Fundamentalist burden-sharing concerns in the United States.

Dissatisfaction in the United States about the level and share of its contribution to NATO defense is more difficult to resolve because it has intensified at the same time that the Intermediate-range Nuclear Forces (INF) agreement has left the military strategy of NATO in need of repair, in terms of both doctrine and implementation. Controversy continues over the form and degree of nuclear modernization, if any, that should follow the INF agreement in order to strengthen NATO's tactical nuclear deterrent. There is as yet no consensus on a contemporary concept of "flexible response," a term consistent with a broad array of possible force configurations and doctrinal understandings concerning the role of nuclear weapons in deterring military conflict. As time has gone on, both doctrine and the force structures supporting it have adjusted to changing technological and military realities and possibilities, although not always in complete synchronicity. NATO's response to the changes resulting from the INF agreement is still in a formative stage. NATO members have serious differences of view, with German resistance to modernizing short-range nuclear weapons, on the one hand, and U.S. and British pressure to do so on the other. No consensus on nuclear modernization exists today or is likely to emerge before the German elections in 1990. Similarly, while modest improvements in conventional capabilities are under way, there is no NATO consensus on how to reduce the continuing numerical imbalance in conventional weaponry in Europe; strategies that rely heavily on defensive operations compete with doctrines for carrying the war deep into Warsaw Pact territory.

As challenging as the unresolved force structure issues is the political challenge posed by the Soviet Union's new style of security diplomacy. Soviet agreement to a "zero-zero" solution to the INF issue required a willingness on their part to accept previously unthinkable asymmetric reductions and verification procedures, and this apparent reversal has given them greatly enhanced public credibility in the arms control area. The abundant evidence of Soviet economic and governance problems revealed as a result of *glasnost* also has reinforced the credibility of their apparent change in attitude and approach. The Soviets have used this credibility skillfully in their advocacy of radical conventional arms control and denuclearization proposals in Europe,

and have helped to create a premature euphoria about prospects for "ending the Cold War," particularly in Germany. As a consequence, potential political support for increased defense budgets among NATO members had been undercut even before Gorbachev's December 1988 speech at the UN General Assembly. That speech intensified Western defense budget problems, although even after full implementation of the announced force structure reductions much more would still have to be done before conventional military capabilities in Europe would be perceived by Western strategists as roughly equivalent. The consequence of the political, economic, and security developments outlined above is that NATO would seem to be firmly impaled on what might be termed the horns of interlocking dilemmas.

The unfavorable outlook for increased defense spending in NATO suggests that possibilities for improving NATO's conventional posture vis-à-vis Soviet forces in the short term must be judged questionable at best. A radically asymmetrical conventional arms control agreement could change this outlook, but it would be imprudent to rely solely on progress in arms control to make a major contribution to resolution of NATO's various dilemmas. Based on precedent and current approaches, the outlook is for a protracted period of negotiation during which the outcome remains uncertain. In the very short term, political pressures from the United States for greater burden-sharing on the part of the European allies probably will be tempered so as not to impinge on conventional arms control negotiations. In particular, pressures to bring large number of U.S. troops home are likely to be deferred so as not to undercut the U.S. negotiating position, just as they were in the seventies when the various Mansfield amendments were delayed. However, continued budget stringencies and unresolved differences of opinion between the United States and its NATO allies about nuclear modernization and improvement in the conventional balance may well combine to give burden-sharing issues renewed urgency within the next few years. Certainly substantially weakened U.S. economic performance—heavy pressure on the dollar, renewed inflation, or recession—could sharpen burden-sharing disputes between the United States and its allies. In such an environment the Soviets might be tempted to harden their stance toward conventional arms negotiations with a view to exacerbating strains in the Atlantic Alliance, particularly if U.S. and European views on nuclear modernization and conventional requirements were still reconciled only imperfectly.

In light of these considerations, simply putting burden-sharing concerns on the back burner until the outcome of conventional arms talks is clear could be a risky strategy. At the same time, there is no realistic possibility of increasing defense expenditure shares in Europe

beyond historical levels, however much pressure is exerted by the United States. Indeed, U.S. pressure to squeeze more defense spending out of our NATO allies at a time when our own defense appropriations are being reduced, and when European publics perceive a diminishing Soviet military threat, is likely to have a primary effect of weakening NATO unity rather than increasing European defense budgets. As the discussion earlier in this report has made clear, European contributions are measured poorly by defense budgets alone. European military forces today would bear the brunt of any military activity in Europe, and can be expected to do so for the foreseeable future. What is essential is a continuing commitment by the European governments to their own self-defense as part of the Atlantic Alliance, and to significant efforts to make such self-defense feasible. Such a commitment does not necessarily imply higher levels of defense spending.

What is needed is a consensus on the direction that NATO burden-sharing will take in the future. Such a consensus must, of course, be associated with agreement on the broad lines of development of NATO force structure and doctrine, but an understanding on burden-sharing could in turn help achieve the needed strategic consensus on NATO strategy. Moreover, a better understanding on burden-sharing would help to ensure that negotiations on conventional arms reductions, even if prolonged, would not weaken NATO as a result of divisive burden-sharing disputes. That is a real danger in light of the pervasive impression in the United States that Europeans take U.S. defense efforts in Europe for granted and neglect their own defense responsibilities, and the growing resentment in Europe over U.S. pressures to increase European defense spending in accordance with U.S. priorities and strategy. In short, a burden-sharing consensus must be sought in the context of intra-Alliance relations as a whole, and the suggestions presented below derive from this perspective.

But is there a basis for any such consensus? Once the fixations of the Fundamentalists with the level of European spending and that of the Atlanticists with the quasi-sacrosanct character of the presence of U.S. forces in Europe are overcome, present circumstances can be seen as more promising for a restructuring of burden-sharing than at first might seem to be the case. Such a restructuring could have two components. First, as a result of Europe's growing economic capabilities, and the possible intensification of intra-political cooperation, the potential for a strengthened European pillar offers an opportunity for the future evolution of the transatlantic bargain that is far from fully realized. Second, with such strengthening, the proper size and role for U.S. forces in Europe over the long term can be assessed, soberly and appropriately.

STRENGTHENING THE "EUROPEAN PILLAR"

The establishment of a barrier-free EEC in 1992 will result in a more integrated European economy, which would be half again as large as that of the United States. Even if Prime Minister Thatcher's relatively austere ideas prevail, 1992 will mark a political as well as an economic watershed for Western Europe and will be associated with the creation of additional diplomatic and strategic power. As part of this process it is reasonable to envisage important steps taken to begin making post-1992 Western Europe more cohesive militarily than today and more equal as a U.S. partner in European security matters. Recent steps indicate such a process is under way but at a very early stage; witness the recent establishment of a joint Franco-German brigade. Still, European members of NATO have yet to determine how far they want to go in integrating their military efforts. Even though a new EDC remains well beyond what is achievable in the foreseeable future, a concept of a more integrated European military establishment may take shape between now and 1992, as a result of increased European political and economic integration, as well as the likelihood of a reduced U.S. presence in the longer term. By improving the efficiency with which European defense resources are used, development and implementation of such a concept would make a more significant contribution to NATO burden-sharing than any conceivable European increases in defense spending. For its part, the United States should encourage such a stronger European pillar, whether developed through the Western European Union or in other ways, and work actively with other NATO members toward a doctrine and force structure that would permit its European allies greater responsibility and authority in defense matters.

As part of such an effort, measures to enhance the productivity of NATO defense spending through greater specialization and efficiency improvements could help offset force-structure adjustments compelled by demographic factors. The 1987 Vredeling Report (commissioned by the Independent European Program Group) on the competitiveness of the European defense industries has called attention to the opportunities for increasing defense sector productivity by removing existing barriers in Europe to transnational competition. Although there have been recent initiatives in this area, including the 1985 Nunn amendment in the United States linking funding for certain projects to collaboration within NATO, no comprehensive policy yet has been agreed upon. In addition to consideration of ways to remove national barriers, European statesmen have yet to decide, as part of the 1992 process of completing the Common Market, the relationship between the

European and American defense sectors. Nothing would be more damaging to the cause of NATO burden-sharing than increased *de facto* protection against the U.S. defense industry as a result of greater integration of the European defense industry and a "buy-European" policy. However, if this is avoided, removal of national procurement barriers would have the added benefit of not only making weapons cheaper, but of enhancing European defense efforts by increasing commonality and inter-changeability of NATO weaponry.

To facilitate defense cooperation, consideration might also be given to expanding the scope for compensating NATO members who provide forces stationed in other NATO countries. Existing programs that provide for multilateral cost sharing, such as the infrastructure program and Host Nation Support agreements, have shown how useful such arrangements can be. The principle that individual members make their own decisions on force levels and their deployment is likely to remain an appropriate one for NATO, but there is scope for more complete sharing of the extra costs associated with out-of-country activities and force deployment. Current unilateral and bilateral arrangements could be phased into a broader multilateral program in which such costs are shared according to an agreed schedule. Such an effort would result also in a more appropriate burden-sharing compensation to the United States for its European deployments.¹

The demographic outlook in several European countries—Germany in particular—suggests that achieving more optimal use of European manpower resources may be critically important. The recently established Franco-German brigade, while introduced for other reasons, has opened the door to further international organization innovations, perhaps involving more than two countries. The recent proposal of the FRG for a multinational "fire brigade" air cavalry division is an indication of how rapidly thought is evolving in this area, although formidable language and training problems would be posed by such multinational initiatives. Over time, in an economically integrated Europe, where manpower is encouraged to move freely across national borders in response to economic incentives and opportunities, a significant degree of internationalization of military forces will become possible.

There are, in short, many ways in which a more integrated European defense community can be fostered without going so far as to eliminate national autonomy concerning defense matters. It is appropriate for the United States to encourage serious European

¹Efforts have been made from time to time to increase German contributions to the support of U.S. forces stationed in Germany. Not surprisingly, these efforts have never been fully successful, since the political costs of such bilateral proposals have been very high. A multinational scheme under NATO auspices would be far less provocative politically, although inescapably more cumbersome.

initiatives in this direction, recognizing that such initiatives will be accompanied by European claims for greater equality in NATO decisionmaking and that the transition will bring difficult and contentious problems of adjustment. In any event, how great a spending burden Europe is prepared to assume, how it is to be shared among the European members of NATO, and how much, if any, movement there is toward reducing national sovereignty over major European defense budget and force structure decisions are matters for the Europeans themselves to sort out in light of alliance obligations and benefits, just as decisions on U.S. troop deployment in Europe inherently are U.S. decisions taken in an alliance context.

U.S. TROOPS IN EUROPE

The historical bottom line of burden-sharing in NATO is the effect on U.S. troops in Europe. From a U.S. point of view, the presence of American ground forces on the European continent has been seen as the quintessential "burden," and it is their presence with attendant expenses that is most resented in times of financial stringency, leading to fierce arguments for Europeans to do more to provide for their own defense. From a European point of view, the presence of American ground forces represents the ultimate commitment. Their presence has been the glue in the alliance. Consequently, nothing could be more destructive to NATO's strategic posture at this moment in history than U.S. threats to withdraw its troops unless our NATO partners increase their defense spending. Certainly U.S. budgetary stringencies and changes in the strategic environment mean that U.S. troop cutbacks in Europe should be considered seriously: If U.S. troop cutbacks or withdrawals appear warranted, NATO will benefit from a straightforward presentation of U.S. concerns and proposals. Reducing the number of U.S. troops in Europe *per se* need not weaken NATO as an alliance. However, linking U.S. troop cutbacks to U.S. resentment of alleged inadequacies in Europe defense efforts is certain to do so.

The growing economic power of Europe and the increasing degree of unified European political action make virtually inevitable a shift of power and responsibility in military affairs. In time, this shift of power and responsibility is likely to be associated with reduced numbers of U.S. troops in Europe, and a move toward a division of labor more like that envisaged at the time NATO was founded. There is no need for supporters of NATO to be unduly concerned by this prospect: The presence of U.S. troops is not an all-or-nothing proposition, nor is there anything sacrosanct about their present levels. Indeed, NATO

itself should undertake serious discussion of the circumstances under which a reduction in their numbers would be warranted and desirable. If conventional arms negotiations with the Soviets go well, U.S. troop reductions can come earlier and in larger numbers; if such negotiations are inconclusive, U.S. troop reductions will be deferred and their scale reduced. What should be sought as soon as practicable is a NATO consensus on a strategy for such reductions, as part of an integrated transition to the new world of the 1990s and beyond. This, together with the evolution of a strengthened European pillar, would provide the foundation for a durable resolution of burden-sharing issues.

It is now almost 40 years since the dispatch of U.S. ground forces to Europe by President Truman. Throughout the ensuing years, NATO has retained a remarkable degree of unity and cohesiveness and the transatlantic bargain of U.S. commitment in return for European contributions has proved durable if imperfect and has enabled NATO to surmount a series of major political challenges since its inception, including the introduction of German forces into NATO proper, the evolution of the U.S. nuclear shield, French withdrawal from the unified NATO command, and deployment of Pershing missiles in response to the intended intimidation of the Soviet SS20s. To be sure, NATO has not yet adjusted fully to the post-INF world, and still less to the military stand-down which may result from changes in Soviet policy and conventional arms control negotiations. Nevertheless, those "present at the creation" would take some satisfaction from the steady increase in European defense capabilities detailed in this report and the continued active U.S. participation in European defense affairs. Looking to the future, there are more grounds for optimism than concern that the historic transatlantic bargain can be sustained in a form appropriate to changing security and economic circumstances, and acceptable to both U.S. and European political interests and public opinion. It would be shortsighted and perhaps dangerous to revert to a narrow and mechanical view of burden-sharing at just the time that there exists hope over the longer term for substantially reduced defense burdens for all members of the Atlantic Alliance.